

In the Claims

1. (Currently Amended) A dismounting device for a heavy load hoisting sling, comprising:

a base (16, 116) including at its upper end a crane engagement portion (27) to be engaged with a hook (26a) of a crane (26, 226) or with a hook block (227);

a lever holder (17, 117) pivotally connected at a substantial center thereof to a first shaft (11) affixed to the base (16) below the crane engagement portion (27);

a link lever (18, 118) including a proximal end swingably mounted on a second shaft (12) affixed to the base (16, 116) below the first shaft (11), and a distal end to be releasably engaged with a distal end of the lever holder (17, 117), in which one end of a sling (13) including the other end to be hung on the hook (26a) of the crane (26, 226) or on the base (16, 116) so as to be engageable with a heavy load (14, 114), is releasably hung on the link lever (18, 118); and

releasing means (19, 119) for lowering a proximal end of the lever holder (17, 117) to raise the distal end of the lever holder (17, 117), thereby releasing the distal end of the link lever (18, 118) from the distal end of the lever holder (17, 117).

2. (Currently Amended) The dismounting device for a heavy load hoisting sling of claim 1, wherein said link lever (18) includes: a proximal end portion (18a) swingably mounted on said second shaft (12); a curved portion (18b) provided continuously to said proximal end portion (18a) and curved at a predetermined curvature radius; a distal end portion (18c) engageable with the distal end of said lever holder (17); and a beam portion (18d) connecting said curved portion (18b) and said distal end portion (18c) with each other; and

wherein, when assuming:

a limit point of action (P) which is a position where the other end of said sling (13) contacts with said link lever (18), when said link lever (18) is turned about said second shaft (12) so that said beam portion (18d) is brought from an upright posture to a horizontal posture, by releasing said link lever (18) from said lever holder (17), from a state where the other end of said sling (13) engaged with said heavy load (14) is hung

on said link lever (18) and the distal end of said link lever (18) is engaged with the distal end of said lever holder (17);

an angle α which is defined between: a straight line (L) connecting a central point of said second shaft (12) to said limit point of action (P); and an inside line of said beam portion (18d); and

an angle β which is defined between: a straight line (M) connecting the central point of said second shaft (12) to a center of gravity (G) of said link lever (18); and an inside line of said beam portion (18d);

one or each of said angle (α) and angle (β) is configured to be an obtuse angle.

3. (Currently Amended) The dismantling device for a heavy load hoisting sling of claim 1, wherein said releasing means (19, 119) comprises:

a slider (31, 131) vertically movably provided on said base (16, 116) to engage with the proximal end of said lever holder (17, 117), thereby urging the proximal end of said lever holder (17, 117) in a direction to push down the same;

locking means (32, 132) provided on said base (16, 116) and engaged with said slider (31, 131) to thereby temporarily lock said slider (31, 131) in a raised state; and

unlocking means (33, 133) for unlocking the temporarily locked slider (31, 131);

wherein when the weight of the heavy load (14) is applied to the link lever (18, 118) through said sling (13), there is maintained a state where the distal end of said link lever (18, 118) is engaged with the distal end of said lever holder (17, 117); and

wherein said slider (31, 131) is configured to raise the distal end of said lever holder (17, 117) to thereby release the distal end of said link lever (18, 118) from the distal end of said lever holder (17, 117) when the temporarily locked slider (31, 131) is unlocked by said unlocking means (33, 133) and the weight of the heavy load (14) is not applied to said link lever (18, 118) through said sling (13).

4. (Currently Amended) The dismantling device for a heavy load hoisting sling of claim 3, wherein said base (16, 116) includes: a first plate (21, 121) and a second plate (22, 122) both extending vertically; and a fixing plate (24, 124) provided between said first plate (21, 121) and said second plate (22, 122), to horizontally extend or to be

inclined, to thereby couple said first plate (21, 121) to said second plate (22, 122), said fixing plate (24, 124) being formed with a through-hole (24a, 124a);

wherein said slider (31, 131) includes an ascending/descending rod (31a, 131a) loosely inserted through said through-hole (24a, 124a), and an engagement plate (31b, 131b) which is integrally provided at an upper portion of said ascending/descending rod (31a, 131a) and which extends horizontally or is inclined;

wherein said engagement plate is configured to engage with the proximal end of said lever holder (17, 117);

wherein when the weight of the heavy load (14, 114) is applied to said link lever (18, 118) through said sling (13), there is maintained a state where the distal end of said link lever (18, 118) is engaged with the distal end of said lever holder (17, 117); and

wherein said engagement plate (31b, 131b) is configured to raise the distal end of said lever holder (17, 117) by self-weights of at least said ascending/descending rod (31a, 131a) and said engagement plate itself to thereby release the distal end of said link lever (18, 118) from the distal end of said lever holder (17, 117) when the weight of the heavy load (14, 114) is not applied to said link lever (18, 118) through said sling (13).

5. (Currently Amended) The dismounting device for a heavy load hoisting sling of claim 3, wherein said locking means (32, 132) comprises an adjustable bar (34, 134) having an elongated engagement hole (34a, 134a) through which said slider (31, 131) is vertically movably fitted, said adjustable bar (34, 134) being provided on said base (16, 116) in a manner to be swingable in a vertical plane and slidable in a longitudinal direction of said adjustable bar (34, 134) in the fitted state;

wherein said slider (31, 131) is configured to be engaged with edges of said elongated engagement hole (34a, 134a) when said adjustable bar (34, 134) is brought to a predetermined inclination angle; and

wherein said unlocking means (33, 133) comprises an arm (36, 136) adapted to move said adjustable bar (34, 134) in a direction to release said slider (31, 131) from said adjustable bar (34, 134).

6. (Currently Amended) The dismounting device for a heavy load hoisting sling of claim 3, wherein said locking means (32) comprises a first magnet (44) adapted to retain said slider (34) in a raised state by a magnetic force and to release said slider (34) by erasing the magnetic force; and

wherein said unlocking means (33) comprises: first switchover means (54) for generating or erasing the magnetic force of said first magnet (44); and remote control means (37) for remotely controlling said first switchover means (54) to thereby control said first magnet (44).

7. (Currently Amended) The dismounting device for a heavy load hoisting sling of claim 5, further comprising: a second magnet (42) configured to retain said arm (36) by a magnetic force in a state where said adjustable bar (34) is engaged with said slider (34); a resilient body (64) configured to urge said arm (36) in a direction to release said slider (34) from said adjustable bar (34); second switchover means (52) for generating or erasing the magnetic force of said second magnet (42); and remote control means (37) for remotely controlling said second switchover means (52) to thereby control said second magnet (42).

8. (Currently Amended) The dismounting device for a heavy load hoisting sling of claim 1, further comprising a handle (48) that which is protrudeds from the distal end of said lever holder (17, 117) and which can be gripped by a human worker.

9. (New) A dismounting device for a heavy load hoisting sling, comprising:

a base including at its upper end a crane engagement portion to be engaged with a hook of a crane or with a hook block;

a lever holder pivotally connected at a substantial center thereof to a first shaft affixed to the base below the crane engagement portion;

a link lever including a proximal end swingably mounted on a second shaft affixed to the base below the first shaft, and a distal end to be releasably engaged with a distal end of the lever holder, in which one end of a sling including the other end to be hung on the hook of the crane or on the base so as to be engageable with a heavy load, is releasably hung on the link lever and

releasing means (19, 119) for lowering a proximal end of the lever holder (17, 117) to raise the distal end of the lever holder (17, 117), thereby releasing the distal end of the link lever (18, 118) from the distal end of the lever holder (17, 117); characterized in

that said releasing means (19, 119) comprises a slider (31, 131) vertically movably provided on said base (16, 116) to engage with the proximal end of said lever holder (17, 117), thereby urging the proximal end of said lever holder (17, 117) in a direction to push down the same;

that said slider (31, 131) includes an ascending/descending rod (31a, 131a) and an engagement plate (31b, 131b) which is integrally provided at an upper portion of said ascending/descending rod (31a, 131a) and which extends horizontally or is inclined;
and

that said engagement plate is configured to engage with the proximal end of said lever holder (17, 117).

10. (New) The dismounting device for a heavy load hoisting sling of claim 9, wherein said link lever (18) includes: a proximal end portion (18a) swingably mounted on said second shaft (12); a curved portion (18b) provided continuously to said proximal end portion (18a) and curved at a predetermined curvature radius; a distal end portion (18c) engageable with the distal end of said lever holder (17); and a beam portion (18d) connecting said curved portion (18b) and said distal end portion (18c) with each other; and

wherein, when assuming:

a limit point of action (P) which is a position where the other end of said sling (13) contacts with said link lever (18), when said link lever (18) is turned about said second shaft (12) so that said beam portion (18d) is brought from an upright posture to a horizontal posture, by releasing said link lever (18) from said lever holder (17), from a state where the other end of said sling (13) engaged with said heavy load (14) is hung on said link lever (18) and the distal end of said link lever (18) is engaged with the distal end of said lever holder (17);

an angle α which is defined between: a straight line (L) connecting a central point of said second shaft (12) to said limit point of action (P); and an inside line of said beam portion (18d); and

an angle β which is defined between: a straight line (M) connecting the central point of said second shaft (12) to a center of gravity (G) of said link lever (18); and an inside line of said beam portion (18d);

one or each of said angle (α) and angle (β) is configured to be an obtuse angle.

11. (New) The dismounting device for a heavy load hoisting sling of claim 9, wherein said releasing means (19, 119) includes, in addition to said slider(31,131);

locking means (32, 132) provided on said base (16, 116) and engaged with said slider (31, 131) to thereby temporarily lock said slider (31, 131) in a raised state; and

unlocking means (33, 133) for unlocking the temporarily locked slider (31, 131);

wherein when the weight of the heavy load (14) is applied to the link lever (18, 118) through said sling (13), there is maintained a state where the distal end of said link lever (18, 118) is engaged with the distal end of said lever holder (17, 117); and

wherein said slider (31, 131) is configured to raise the distal end of said lever holder (17, 117) to thereby release the distal end of said link lever (18, 118) from the distal end of said lever holder (17, 117) when the temporarily locked slider (31, 131) is unlocked by said unlocking means (33, 133) and the weight of the heavy load (14) is not applied to said link lever (18, 118) through said sling (13).

12. (New) The dismounting device for a heavy load hoisting sling of claim 11, wherein said base (16, 116) includes: a first plate (21, 121) and a second plate (22, 122) both extending vertically; and a fixing plate (24, 124) provided between said first plate (21, 121) and said second plate (22, 122), to horizontally extend or to be inclined, to thereby couple said first plate (21, 121) to said second plate (22, 122), said fixing plate (24, 124) being formed with a through-hole (24a, 124a);

wherein said ascending/descending rod (31a, 131a) of the slider (31,131) loosely inserted through said through-hole(24a,124a);

wherein when the weight of the heavy load (14, 114) is applied to said link lever (18, 118) through said sling (13), there is maintained a state where the distal end of said link lever (18, 118) is engaged with the distal end of said lever holder (17, 117); and

wherein said engagement plate (31b, 131b) is configured to raise the distal end of said lever holder (17, 117) by self-weights of at least said ascending/descending rod (31a, 131a) and said engagement plate itself to thereby release the distal end of said link lever (18, 118) from the distal end of said lever holder (17, 117) when the weight of the heavy load (14, 114) is not applied to said link lever (18, 118) through said sling (13).

13. (New) The dismounting device for a heavy load hoisting sling of claim 11, wherein said locking means (32, 132) comprises an adjustable bar (34, 134) having an elongated engagement hole (34a, 134a) through which said slider (31, 131) is vertically movably fitted, said adjustable bar (34, 134) being provided on said base (16, 116) in a manner to be swingable in a vertical plane and slidable in a longitudinal direction of said adjustable bar (34, 134) in the fitted state;

wherein said slider (31, 131) is configured to be engaged with edges of said elongated engagement hole (34a, 134a) when said adjustable bar (34, 134) is brought to a predetermined inclination angle; and

wherein said unlocking means (33, 133) comprises an arm (36, 136) adapted to move said adjustable bar (34, 134) in a direction to release said slider (31, 131) from said adjustable bar (34, 134).

14. (New) The dismounting device for a heavy load hoisting sling of claim 11, wherein said locking means (32) comprises a first magnet (41) adapted to retain said slider (31) in a raised state by a magnetic force and to release said slider (31) by erasing the magnetic force; and

wherein said unlocking means (33) comprises: first switchover means (51) for generating or erasing the magnetic force of said first magnet (41); and remote control means (37) for remotely controlling said first switchover means (51) to thereby control said first magnet (41).

15. (New) The dismounting device for a heavy load hoisting sling of claim 13, further comprising: a second magnet (42) configured to retain said arm (36) by a magnetic

force in a state where said adjustable bar (34) is engaged with said slider (31); a resilient body (61) configured to urge said arm (36) in a direction to release said slider (31) from said adjustable bar (34); second switchover means (52) for generating or erasing the magnetic force of said second magnet (42); and remote control means (37) for remotely controlling said second switchover means (52) to thereby control said second magnet (42).

16. (New) The dismounting device for a heavy load hoisting sling of claim 9, further comprising a handle (48) which is protruded from the distal end of said lever holder (17, 117) and which can be gripped by a human worker.